

# Delta Region Climate Change Vulnerability Assessment and Adaptation Strategy

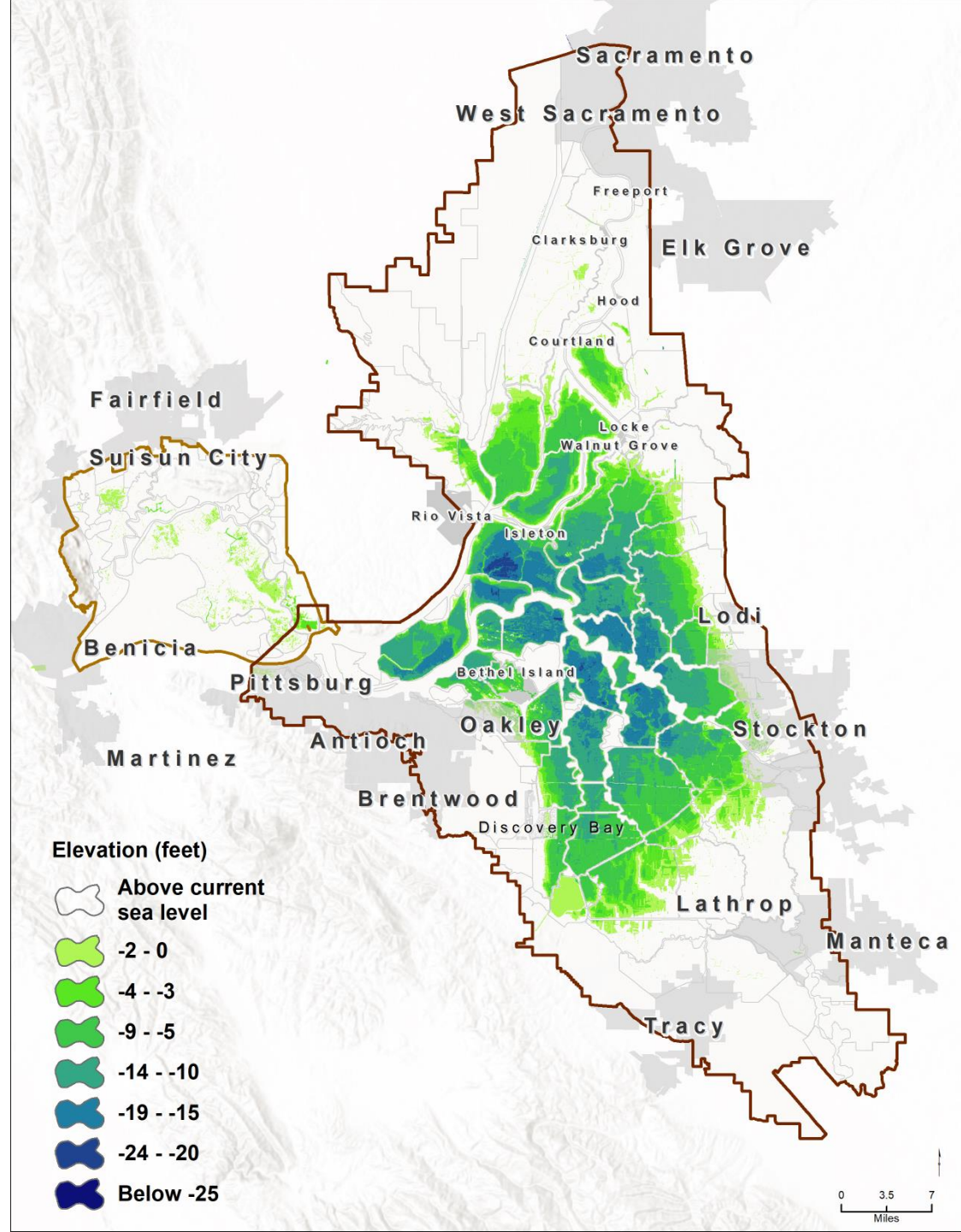
Integrated Climate Adaptation and Resiliency Program (ICARP)  
Quarterly Technical Advisory Council (TAC) Meeting, December 7<sup>th</sup>, 2018

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DELTA STEWARDSHIP COUNCIL

# Where is the Delta?



# Presentation Overview

- Project Background
- Project Overview
  - Conceptual Framework
  - Goals
  - Process
  - Example management questions and initial scoping
- Discussion

# Who is the Delta Stewardship Council?

## **The Delta Plan** Ensuring a reliable water supply for California, a healthy Delta ecosystem, and a place of enduring value



2013



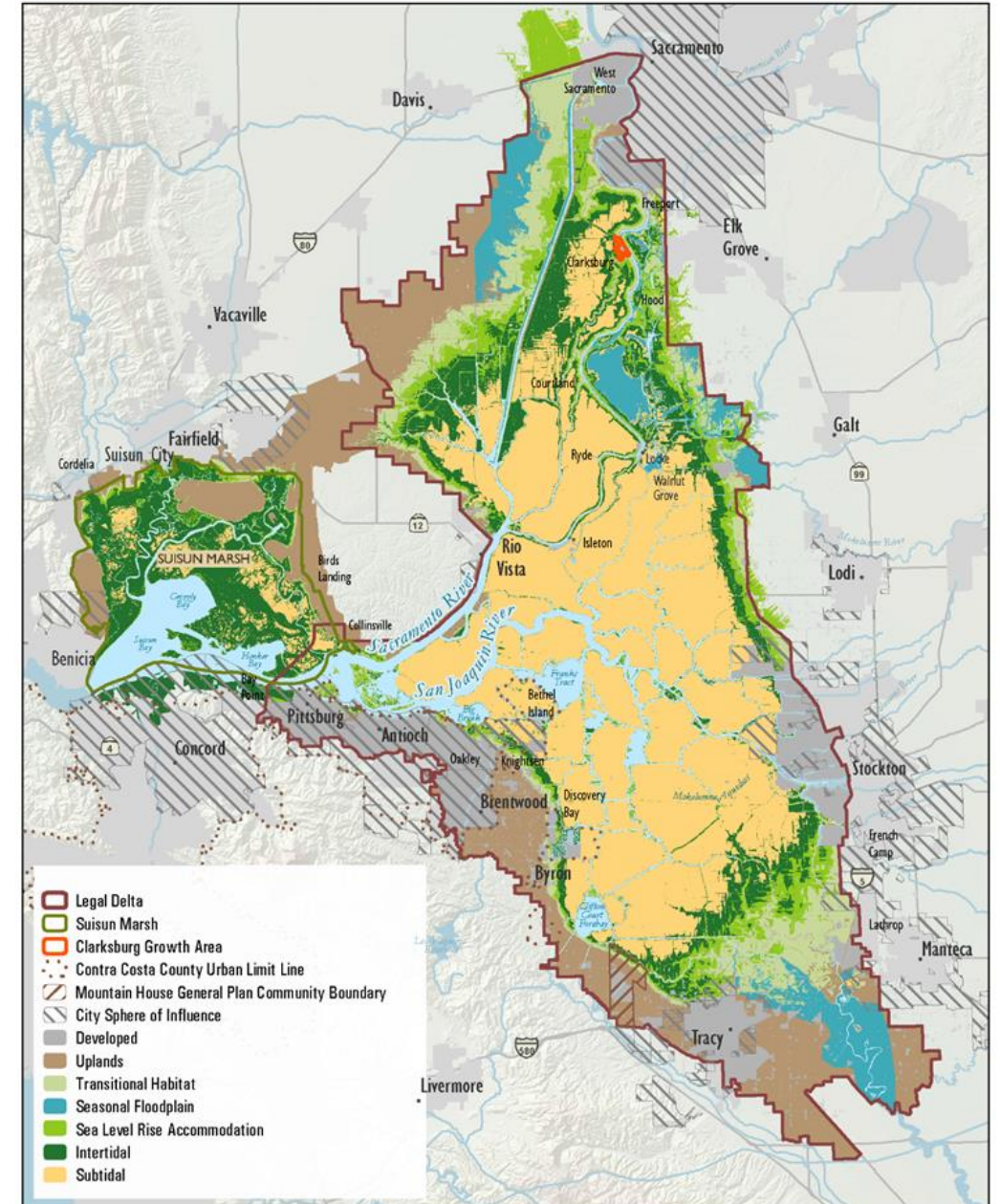
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# Climate Project Background

- Climate change in the Delta Reform Act:
  - “the future impact of climate change and sea level rise” in restoration planning to 2100
  - “the effects of climate change and sea level rise on the three state highways that cross the Delta”
- Climate change in the Delta Plan
  - 2 regulatory policies: restoration planning, some residential development
  - 5 recommendations: i.e. update Suisun Marsh Plan

Habitat Types Based on Elevation, Shown with Developed Areas in the Delta and Suisun Marsh



# Advances since 2013:

## Science

- Updated OPC Sea Level Rise Guidance (2018)
- California 4<sup>th</sup> Climate Change Assessment
- Science Action Agenda (tidal marsh locations over time, water/natural resource mgmt)

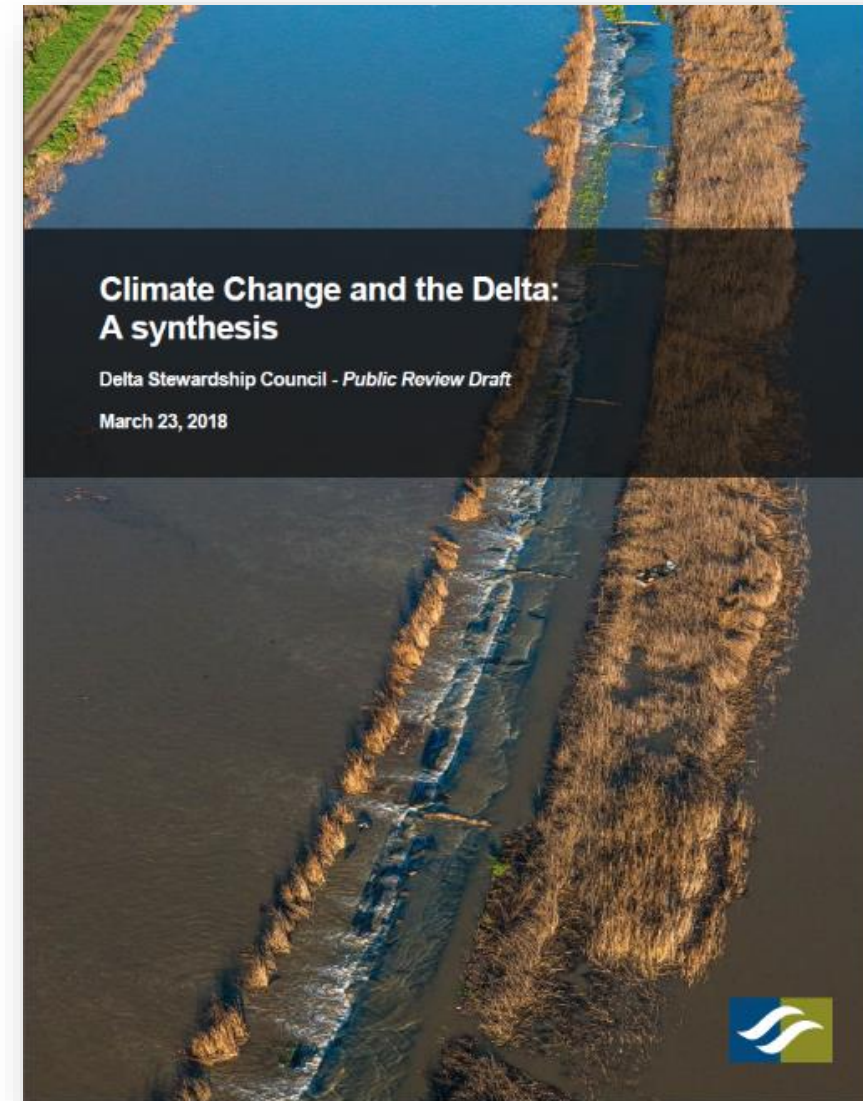
## Regulations

- Delta Plan amendments
- EO B-30-15, SB 379, SB 246, AB 398
- **Local government plans (Solano, San Joaquin, Sacramento, Yolo, Contra Costa, Stockton)**

## Policy

- San Francisco Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) for Eastern Contra Costa
- SWRCB 2017 Climate Resolution

➤ Council embarking on VA/AS to better understand climate change vulnerabilities and potential adaptation strategies in the Delta to support the achievement of the coequal goals



A synthesis of over 200 journal articles and technical reports on climate change as it relates to ecosystem restoration was conducted in early 2018 to support the Delta Plan Ecosystem Amendment

# Conceptual Framework for Climate Project

Goals, Roles, Process

# Climate Change Vulnerability Assessment and Adaptation Strategy

Goals, Roles, and Process

B a l a n c e d   A p p r o a c h

Society and Equity

Economy

Environment

Governance

**More  
Reliable  
Water Supply**

**Ecosystem  
Restoration**

**Protect /  
Enhance Delta  
as Evolving  
Place**



# VA/AS Project Overview

## Phase 1: Vulnerability Assessment

- Characterize climate change impacts and *risk*
  - SLR, precip/ runoff patterns, air / water temps
- On assets including:
  - residents, disadvantaged communities, agriculture, community facilities and services, land uses, water management / flood control, parks /recreation, transportation, natural resources, and energy / fuel supply

## Phase 2: Adaptation Strategy

- Evaluate potential responses that could be implemented that would achieve resilience goals

## Process:

- Technical Advisory Committee (TAC)
- Stakeholder workgroup
- Council engagement
- Public awareness / communications plan

## Deliverables

- VA Assessment
- AS with:
  - High priority adaptation responses
  - Assessed costs/benefits
  - Financing
  - Governance
  - Council role
- TAC workgroup /workshops
- Stakeholder workgroups / workshops
- VA/AS public communication materials

# VA/AS General Process

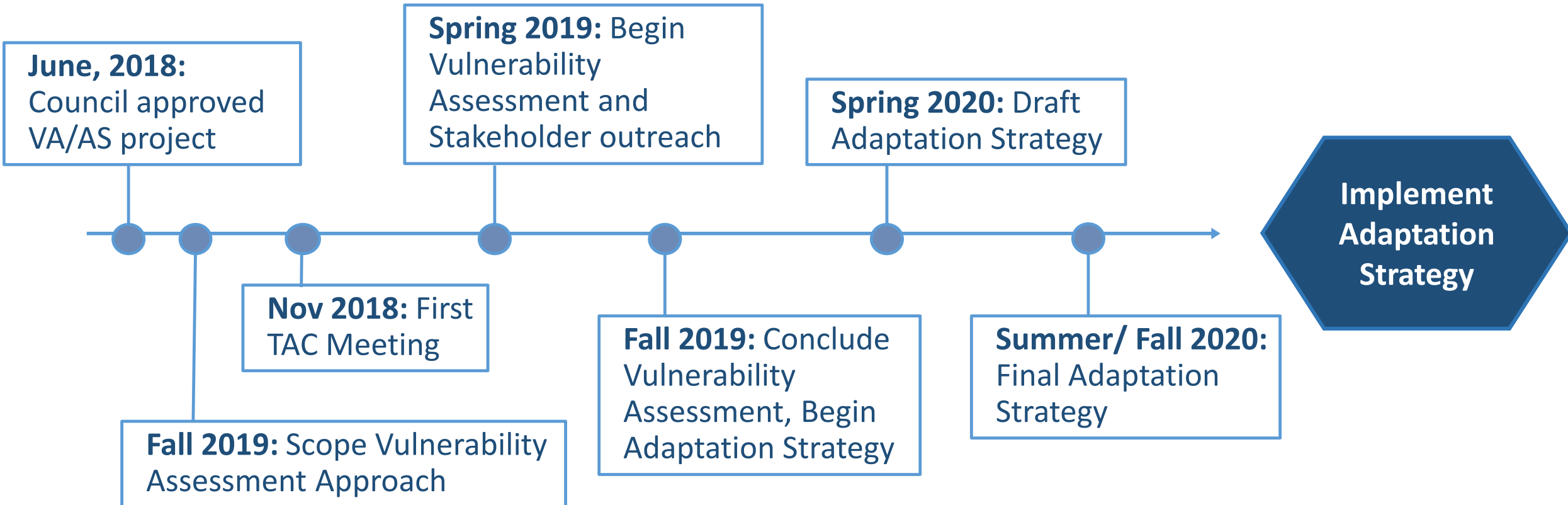
- 1. Identify Management Questions:** What is of interest to Delta stakeholders
- 2. Prioritize Questions:** Input from TAC / stakeholders on *scope* and *criteria*
- 3. Analysis Approach:** Identify appropriate methods (ie modeling) to address priority management questions
- 4. Assess Vulnerabilities**
- 5. Develop Potential Adaptation Options**
- 6. Prioritize Adaptation Options**

## Multiple Levels of Engagement

- Technical Advisory Committee (TAC)
- Stakeholder workgroup
- Council engagement
- Public awareness / communications plan

# VA/AS Timeline

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# Example VA Management Questions

## Water Surface Elevations

- How would inundation of various Delta polders affect water supply/water quality?
- What are the implications for carryover storage of preserving/modifying salinity regulations?
- Which polders are most at risk from overtopping from SLR & inflows? And what assets/populations would be flooded?
- What is the impact to habitat types (intertidal, upland refugia, etc)?
- What parcels should be acquired for restoration?

## Water Quality

- What are water quality impacts from upper watershed degradation?

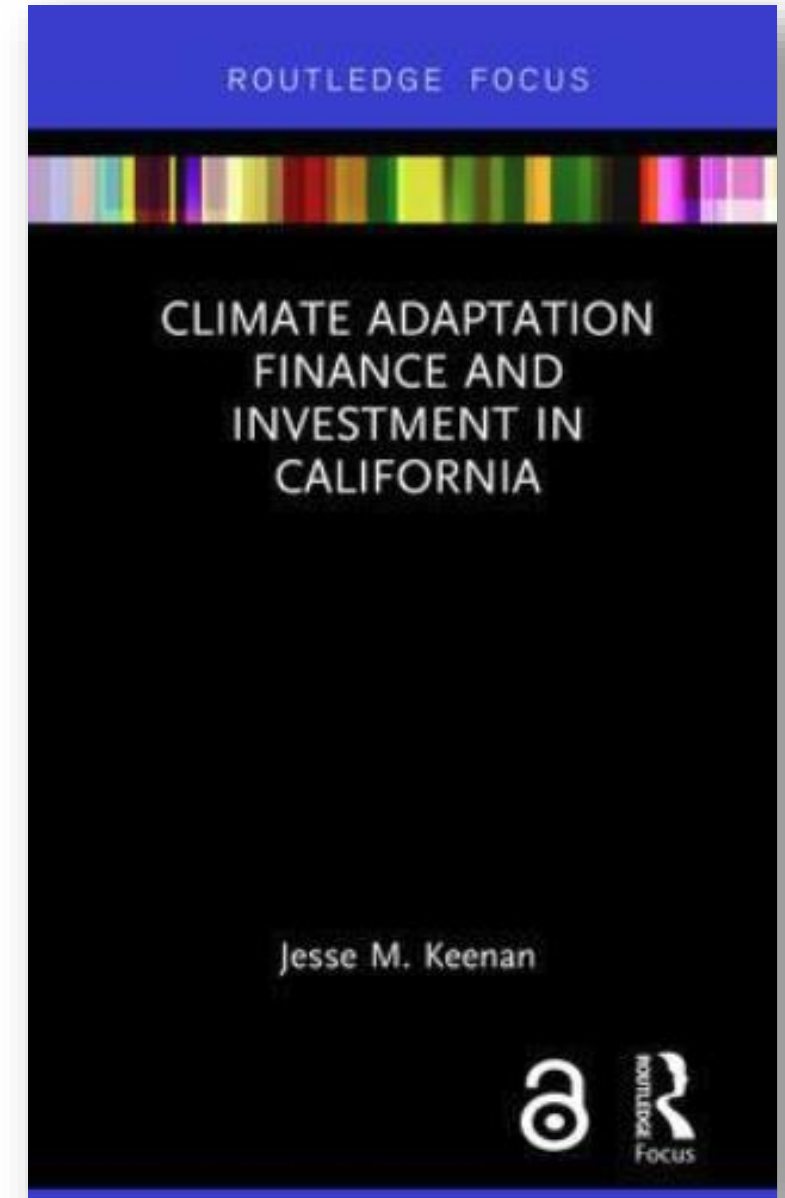
## Climate/Economic/Social

- What is the cost to achieve PL 84-99, HMP, and other levee standards at higher water levels?
- What are the crop yield / productivity losses from temperature / precipitation/water quality changes?
- How vulnerable are Delta communities to extreme temperatures?
- How could air temperature affect recreational opportunities?



# Potential ICARP TAC Engagement:

- Project Guidance
  - Periodic updates as progress through the Vulnerability Assessment and Adaptation Strategy
- Resources and Outreach
  - Adaptation Clearinghouse
  - Alignment with best available science and policy
  - Local government engagement
  - CivicSpark Fellow



# Acknowledgements

Cory Copeland

Dan Constable

Jeff Henderson

Matt Kubasak

Jessica Law

Ron Melcer

Andrew Schwarz



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